

Printed Page:-

Subject Code:- AME0301

Roll. No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - CARRY OVER THEORY EXAMINATION - APRIL 2023

Subject: Manufacturing Technology-I

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C.** It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A

20

1. Attempt all parts:-

- 1-a. In cold chamber die casting, what is the maximum pressure that can be applied? (CO1) 1
- (a) 500 kg/cm²
- (b) 1000 kg/cm²
- (c) 1500 kg/cm²
- (d) 2000 kg/cm²
- 1-b. Steel is an alloy of which two elements? (CO1) 1
- (a) Iron and Brass
- (b) Brass and aluminium
- (c) Iron and carbon
- (d) Carbon and aluminium
- 1-c. _____ increases SiO₂-Na₂O ratio that increases the bond. (CO2) 1
- (a) Sulphuric acid
- (b) Acetic acid

- (c) Carbonic acid
(d) Hydrochloric acid
- 1-d. . _____ is well known as the expendable molding process.(CO2) 1
- (a) Core molding
(b) Hand molding
(c) Machine molding
(d) Shell molding
- 1-e. Punching a number of holes in a sheet is known as? (CO3) 1
- (a) Perforating
(b) Parting
(c) Notching
(d) Lancing
- 1-f. Core boxes are made out of which pattern? (CO3) 1
- (a) Plaster pattern
(b) Wax pattern
(c) Metal patterns
(d) Polystyrene patterns
- 1-g. If you want to create a small indentation (hole) at the center of the sheet metal, you need _____. (CO4) 1
- (a) Scriber
(b) Tri square
(c) Centre punch
(d) None of the above
- 1-h. Where will you provide the clearance in the blanking operation? (CO4) 1
- (a) On the punch
(b) On the die
(c) Anyone either punch or die
(d) None of these
- 1-i. In which of the following gas welding process a non-consumable electrode is used? (CO5) 1
- (a) Submerged arc welding
(b) Tungsten inert gas welding
(c) Stud welding

(d) Gas metal arc welding

- 1-j. The deflection of the arc in arc blow is by? (CO5) 1
- (a) Electric field
 - (b) Magnetic field
 - (c) Combination of both
 - (d) Hydrostatic field

2. Attempt all parts:-

- 2.a. What is core? (CO1) 2
- 2.b. Give any two types of pattern.(CO2) 2
- 2.c. Classify the various sintering methods.(CO3) 2
- 2.d. Define Wrinkling. (CO4) 2
- 2.e. Explain consumable and non-consumable electrodes.(CO5) 2

SECTION B

30

3. Answer any five of the following:-

- 3-a. Name the problems encountered in pressure die – casting. (CO1) 6
- 3-b. Name the pattern allowances which can be quantitatively specified. Write brief note on each of them. (CO1) 6
- 3-c. Describe various types of sands used in mold making. (CO2) 6
- 3-d. Discuss contents of molding sand. (CO2) 6
- 3.e. Discuss the design aspect to be considered in making forging dies.(CO3) 6
- 3.f. Explain the different types of bending process.(CO4) 6
- 3.g. Mention the application of friction welding.(CO5) 6

SECTION C

50

4. Answer any one of the following:-

- 4-a. Explain Metal-Casting Processes also its Advantages, Limitations and Applications. (CO1) 10
- 4-b. Explain the centrifugal casting with a neat sketch and state its applications. (CO1) 10

5. Answer any one of the following:-

- 5-a. A cubic casting of 50 mm side undergoes volumetric solidification shrinkage and volumetric solid contraction of 4% and 6% respectively. No riser is used. Assumed uniform cooling in all directions. The side of the cube after solidification and contraction is (CO2) 10

- 5-b. A cube-shaped casting solidifies in 5 min. The solidification time in min for a cube of the same material, which is 8 times heavier than the original casting, will be (CO2) 10

6. Answer any one of the following:-

- 6-a. How does a compound die differ from progressive die? Giving a neat sketch, describe construction features and working of compound die. (CO3) 10
- 6-b. A washer with a 12.7 mm internal hole and an outside diameter of 25.4 mm is to be made from 1.5 mm thick strip of 0.2 percent carbon steel. Considering the elastic recovery of the material, find a. clearance, b. blanking die opening size, c. the piercing punch size (CO3) 10

7. Answer any one of the following:-

- 7-a. Find the force required to draw a wire of size 4 mm from a rod of 5 mm through a conical die of semi-die angle 15° with coefficient of friction 0.05 and $k = 200 \text{ N/mm}^2$ assume no back tension. (CO4) 10
- 7-b. Explain the basic steps in Powder Metallurgy Process. (CO4) 10

8. Answer any one of the following:-

- 8-a. Explain the general characteristics of a transformer. (CO5) 10
- 8-b. Explain the Gas Welding process with neat sketch. (CO5) 10